cord. He deplored the conservative tendency which prevents our recognizing, or causes us falsely to interpret, the not infrequent loss of reflexes in cerebral disease. He agreed with Pandi that it is illogical to credit the brain and the spinal cord with opposing functions.

Sexual Infantilism, with Optic Atrophy in Cases of Tumor Affecting the Hypophysis Cerebri.—By Dr. Harvey Cushing. (See this journal, p. 704.)

Dr. Spiller said that primary optic atrophy is not uncommon in tumors of the hypophysis cerebri. Arrest of menstruation occasionally occurs in cases of brain tumor. He had had a case during the past year in which menstruation ceased four years ago. Recently menstruation occurred after improvement following a palliative operation on the skull.

Optic neuritis as a sign of cerebral hemorrhage is regarded, and Dr. Spiller thought justly so, as rare. Within the past few weeks, however, Dr. Spiller had had a case in which it occurred. This sign may lead to a diagnosis of tumor instead of hemorrhage if one is not on his guard.

Dr. Dercum said that there is and must be a close relationship between all the internal secretions, and in cases of this kind it would not be strange if there were interference with the function of other ductless glands than the pituitary, for example of the ovaries. It is also suggestive from the standpoint of acromegaly that in these cases there is no sexual power or desire.

Dr. Joseph Collins said these cases impressed him in a somewhat different way from what they did Dr. Dercum, apparently. It seemed to him that the lack of menstruation is but a manifestation of that disharmonious development of which retention of the pituitary gland is itself an indication. The part of the paper that is of greatest interest to him is that which referred to the statements of some of the clinicians who saw that the patients had edema or that they were on the look out for it. It is quite possible that the pre-hypophysis throws into the economy a secretion similar to the secretion of the thyroid gland, and that one of the manifestations of this secretion is a constitutional condition—one might almost say a cachexia—not similar to it, but analogous to the condition that arises from hyperthyroidization. This condition might likewise account for the ventricular manifestations described in this case.

Dr. Cushing replied in regard to what Dr. Spiller had said concerning the occurrence of choked disc in intracranial hemorrhage. They had found that condition in almost all cases of intracranial hemorrhage.

The cases with loss of sexual power mentioned by Dr. Dercum seem to be quite common.

(*To be continued.*)

NEW YORK NEUROLOGICAL SOCIETY.

April 3, 1906.

The President, Dr. Joseph Fraenkel, in the Chair.

A Case of Cerebral Neoplasm.—Dr. William B. Noyes exhibited a skiagraph taken by Dr. Charles M. Cauldwell which showed a distinct shadow over the ponto-cerebellar region. The case was that of an Italian boy, eleven years old, who had been shown by Dr. Noyes at a meeting of the Society in 1905. There was no history of syphilis nor tuberculosis. The earliest manifestation of his trouble was pseudo-ptosis, first in the right eye, and then in the left. He complained of frequent headaches, located in the region of the right ear and the right frontal region, and vomited at times.

Examination showed a left facial paralysis of a peculiar sort, with continuous spasm and twitching of the orbicularis palpebrarum; blepharospasm; absence of faradic reaction. The tongue showed choreiform movements or a fine fibrillary twitching. There was no paralysis. There was double choked disk. Observation of the case for a month revealed a constant temperature, ranging from 99° or 100° F. in the morning, to 101° in the afternoon. Subsequently, an internal strabismus developed, which was due to overaction of the internal rectus rather than to paralysis of the external rectus. The conjunctiva of the left eye was anesthetic, but there did not seem to be any other fifth nerve symptoms. The left knee jerk became exaggerated, and there was some ataxia on standing with the eyes closed. The headaches recurred frequently, but yielded to ergot. The patient's general health remained good enough to allow him to play in the yard. Paralysis of the legs developed.

The case was regarded as one of cerebral neoplasm, located in the pons, or, according to the view of one observer, in the facial center in the cortex. Dr. Noyes believed that it was located in the pons or in the cerebellum, and pressed on the pons, because of the involvement of so many cranial nerves or their nuclei. The nature of the neoplasm was doubtful, with the exception of the fact that the constant elevation of temperature suggested an abscess. The symptoms, however, seemed too distinctly limited to render that diagnosis probable.

The patient subsequently left the hospital, where he had been under Dr. Noyes' observation, and went to Brooklyn, where he died in the course of a month or so. Prior to his death, he developed paralysis of all his limbs, a stuporous condition and general marasmus. No autopsy was obtained.

The skiagraph showed a distinct shadow in the ponto-cerebellar region, which could not be attributed to mastoid trouble nor ordinary bone thickening. It was not near the mastoid region. The absence of a shadow in the cortex proved that the neoplasm was not cortical. The skiagraph tended to confirm the diagnosis that the lesion was located in the central part, corresponding to the focal symptoms that were observed during life.

Cinematograph Pictures of Neurological Subjects.—Dr. Smith Ely Jelliffe said he was enabled to show these pictures through the courtesy of Dr. Cecil MacCoy, of Brooklyn, and while most of them were examples of nervous diseases which were more or less familiar to all, there was no reason why this same method should not be used, if the opportunity offered, to graphically portray rare and unique neurological subjects.

Among the pictures thrown on the screen was one of nystagmus, showing the movements of the eye; also one marked incoördinate movements in which the diagnosis rested between tic and hysteria. Both of these cases occurred in the practice of Dr. Morton Prince, of Boston. The ataxic movements of the upper and lower extremities in tabes, as well as the characteristic Romberg's sign were also illustrated. Also the characteristic gait of hemiplegia and spastic paraplegia and paralysis agitans, and the movements of the hands in the latter disease. Also knee and ankle clonus, and a case of hysterical intention tremor.

Among the pictures that were shown for diagnostic purposes was one of chronic chorea in a young girl, a case of progressive muscular dystrophy, and one of petit mal.

Dr. Cecil MacCoy, of Brooklyn, said that most of the pictures shown by Dr. Jelliffe were taken by him last summer more or less as an experiment, and with the idea that they could be used in connection with his work at the Long Island College. Cinematograph pictures of various clinical conditions had been used very extensively abroad for the instruction of students, and Doyen, of Paris, made it a rule to have all of his operations photographed in this way, so that his patients, when convalescing, could be shown just what surgical technique had been employed. In this way, too, the students could follow the various steps of the operation.

Dr. MacCoy said he was making an effort to introduce this method of photographing operations on the eye, and he had also made the suggestion to orthopedic surgeons that the method would be of value in connection with their work.

Chemical Problems of Neuropathology.—Dr. Carl L. Alsberg, of the Laboratory of Biological Chemistry of Harvard University, in presenting this subject, said the limitations of chemical research in the field of neuropathology were so great, and the work was so extensive, that investigation along these lines might still be said to be in its infancy. Most of the work that had thus far been done was speculative or incomplete, and the subject could best be discussed by referring to the problems in neuropathology that had been already attacked, or that were still to be attacked by the chemist. These problems could conveniently be divided into three groups; namely, those that had to deal with intoxications; those that had to deal with chemical anatomy or pathology, and those that had to deal with questions of metabolism in diseases of the nervous system.

A study of the effect of lead and other similarly well-known toxic agents on the nervous system had developed a better and more rational treatment of those cases, but in the vast majority of the conditions of the nervous system that were supposed to be due to an intoxication, the nature of the supposed toxic agent was quite unknown to us, and we did not even know whether it was an intoxication or something else.

One of the most important problems in this connection that the chemist had to deal with was to search out the intoxicating substance. This applied also to the intoxications that were due to the acute infectious diseases. It did not do very much good to know that syphilis caused this or that disease, if we were ignorant of the poison that was formed bv the syphilitic virus. The results of serum therapy had been so brilliant that they had dazzled the eye, and perhaps to a certain extent were responsible for the neglect to investigate the chemical character of the poisons of those particular diseases. Of course, the isolation of those poisons involved a very complex problem, but the speaker thought its solution was within the range of possibility. There was no reason why any poisonous substance, whether the product of a bacterium or not, should not be studied chemically. If it was possible to isolate the active principle of snake venom, and the poison of a bee's sting, as had been done, and produce immunity thereby, the speaker said he saw no reason for the contention of some bacteriologists that the nature of the poison of infectious diseases was so complex that it was not susceptible of chemical investigation.

Aside from investigating the nature of the toxines that cause various nervous diseases, it was very important, in the same connection, to study the histology of the nervous system, the inter-relationship of the various parts of that system, and the relative susceptibility of those parts. Study along these lines was best done by experimental intoxications with toxic agents specially selected by pharmocologists as adapted to this end.

Apart from any experimental work of this nature it was necessary to consider under intoxications the various forms of auto-intoxication. The commonest was that known as acidosis, to which condition was attributed many of the nervous symptoms exhibited by various patients. The importance of the condition, Dr. Alsberg said, had probably been overestimated, and he was inclined to regard the excretion of acetone and B-oxy-butyric acid and other acids in the urine as secondary to lack of proper nutrition or starvation. The occurrence of acidosis in many surgical conditions, in the course of which it had frequently been reported, could be explained on that basis.

Another rather common form of supposed auto-intoxication was that attributed to the presence of indol and skatol absorbed from the intestines as a result of abnormal putrefaction, although there was no positive evidence that these were really causes of auto-intoxication. Many regarded them merely as manifestations of intestinal putrefaction, and believed that other substances that were as yet unknown were present in addition to the indol and skatol. Still, that was merely begging the question.

Another form of intoxication that had been studied by the French school, Bouchard and others, was the toxicity of the urine. It had been definitely proven that the toxicity, or, more properly, the hypertoxicity of the urine was due to the presence in the urine of potassium and other salts. There was no evidence that the urine was very toxic. It contained toxic substances, to be sure, but these were found in normal as well as pathological urine, and we had no proof that any definite pathological conditions were due to this factor.

Dr. Alsberg said the search for toxic substances had been extended not only to the urine and blood, but also to the cerebrospinal fluid. Normally, the cerebrospinal fluid contained very little albumin, but in cases where there was wasting of nervous tissue the percentage of albumin was increased. In certain cases the quantity of cholin in the cerebrospinal fluid was also found to be increased, and some believed this to be an active factor in the causation of the convulsions in epilepsy. The presence of cholin seemed to be of value only in differentiating between organic and functional nervous conditions. In the latter class of cases it had never been found to be increased, excepting in instances of doubtful neurasthenia.

Other pathological factors in the cerebrospinal fluid in cases of wasting disease of the nervous tissue were absence of sugar and the presence of an excess of phosphoric acid. The freezing point and alkalinity of the cerebrospinal fluid had also been studied. The latter had been done by the tituration method, which for that purpose was now recognized as quite unreliable, and practically of no value. In wasting diseases of the brain the degenerated tissue became richer in water and poorer in solids, and consequently its specific gravity was lowered. The quantity of substance that could be extracted with ether was also diminished, as was the absolute amount of phosphorus.

Coming to the question of metabolism in nervous diseases, Dr. Alsberg said that this aspect of the problem was the most complex of all. In the first place we were not in a position to state that metabolic changes in the muscular tissues had their counterpart in the nervous system. No one was able to show that accompanying hard mental labor there was an increase in the oxygen intake or in the carbonic acid output. Therefore, we were at a loss to know what to look for. The effect of work on the muscles can roughly be studied, but not on the nerves. Any such change must of necessity be very slight, and the results thus far obtained in experimental work along this line had been negative as often as positive. The only conditions in which definite results had been obtained were those in which there was wasting of the nervous tissue, as in general paresis, and sometimes an excessive excretion of phosphorus had been reported. Still, very little could be assumed from that symptom alone, as there were deposits of phosphorus in the bones and other tissues besides the brain. Furthermore, it was known that the metabolism of the phosphates was influenced by the metabolism of acids and by the internal secretions of the sexual glands, and that both these factors played a part in these nervous diseases, thus further complicating the interpretation of the results.

Probably, complete metabolism studies, including the analysis of the feces, and the respiratory gases, as well as of the urine, conducted for long periods, would succeed where the shorter and less complete investigations have failed.

Dr. P. A. Levene said the aim of chemical investigation in the course of disease was either to elucidate the general mechanism of the pathological condition, or to discover the faulty function of one of the internal organs which might be the primary cause of the disease. The difficulty of the latter problem lay in the readiness which was demonstrated by one organ to compensate for the insufficiency of the other, and furthermore, in the fact that a diseased organ might perform its work fully if only a small part of it remained intact, and thus the actual condition escaped the observer.

Notwithstanding all the difficulties certain progress had been made in diagnosing incipient insufficiency of internal organs. However, in studying the relation of the pathological condition of internal organs to insanity and nervous diseases, one was struck by the irregularity of the relationship. There were described numerous cases of insanity caused by diseased conditions of the digestive tract, or the liver or other organ; numerous histories were recorded in which the disease was asserted to have been occasioned by the accumulation of one or of another product of general metabolism, but the proportion of this number to that of similar cases not thus complicated with nervous symptoms was rather small. It seemed therefore profitable that the cause of insanity should be attributed not so much to the given abnormal function of one organ, nor to the usual action of a given product of metabolism, but rather to the peculiar susceptibility of certain individuals to the irregularities in the function of a certain organ, or to the action of a certain product of metabolism.

Was it possible to detect these individual peculiarities by the aid of chemical methods? No effort in that direction had thus far been made. However, it was known that in some pathological conditions the manner in which the organisms reacted to certain chemical substances was different from that in health. Thus, a normal individual was very slightly susceptible to tuberculin, or to uric acid or the carbohydrates, while in disease the same substances might give rise to distressing symptoms.

It was possible that the cause of many neuropathological forms might be found in the abnormal susceptibility of certain individuals to alter normal products of metabolism, or to the mineral tissue or the food components.

Dr. Jelliffe said that he could add very little to this discussion from the chemical standpoint. As an introduction to what he would say, he called attention to the fact that even as far back as the time of Hippocrates it was held that the brain functions were located in four juices of the body, and if these were dammed back, they would give rise to delirium, dementia, terrifying hallucinations, and ideas of suicide. This was the initial stage of an auto-intoxication theory for nervous and mental disorders, now so widely discussed and concerning which so little definite was known.

The remarks of Drs. Alsberg and Levene, Dr. Jelliffe said, had already indicated what a complex problem we had to deal with in this subject; how widespread an investigation it required, and how much time and money and laboratory facility were necessary to arrive at a true interpretation of the relations of metabolic disorders to nervous pathology. For himself, while looking somewhat askance at the general notion of auto-intoxication and mental disorders, he felt that there were lines of closer differentiation to be drawn, and that there were undoubtedly some autotoxic factors that entered into the production of certain mental states.

It was advisable, at the outset of this discussion, to eliminate most of the chronic psychoses, particularly the manic-depressive and paranoid types; their relations to the problem of the evening were far from being advantageously considered in the light of our present knowledge.

A number of acute conditions, notably the deliria associated with alcoholism, with cocainism, with hashishism, with acute febrile disturbance, etc., might very rationally permit of an interpretation from a chemical basis of intoxication. When it was borne in mind what mental symptoms might follow the continued ingestion of minute quantities of lead, of arsenic, of mercury, of ergot, and that subtle changes might result from modification of the iodine proteid in the thyroid gland, as seen in myxedema, it was not illogical to assume that long-continued poisoning or even acute poisoning from products resulting from defects of detoxication on the part of the body might result in nervous or mental lesions.

The study of the human detoxications was still in its infancy. Many poisonous products were more or less imperfectly known; these resulting from the breaking down of the proteids and the fats. Some of the more important of these were diacetic acid, B oxybutyric acid, acetone, indol, phenol, para-cresol, and a number of others. While it was highly improbable that all of these, perhaps any of these, played any casual rôle in the development of mental phenomena, beyond the well known deliria, coma and toxic states seen in diabetes, or in uremia, yet he believed it rational to continue the search for related products, in that they might be shown to be instrumental in causing nervous modifications, or even neurone degenerations.

Chemical detoxications took place in almost all tissues of the body, and there was a great play of compensatory detoxication constantly going on, yet the liver was undoubtedly to be considered the most important detoxifying organ of the body. While Kleppel and Faure had described a special psychosis due to hepatic insufficiency, their observations were in need of more exact proof and verification.

Raimann's patient, with a Korsakoff psychosis, due to profound digestive derangements, was unique, and needed others to establish a relation, but even these showed a drift, not an easy acceptance of superficial auto-intoxication hypotheses, towards a chemical basis for the elucidation of disturbed metabolism in mental disorders. The oxidative functions of the liver were in much need of further study. Such studies profited much, particularly in the study of detoxification; for lessened oxidative function played a highly important rôle in determining tissue degenerations. While the subject of sub-oxidations was almost as nebulous as that of auto-intoxications, pharmacological research was offering more than pure conjecture.

Dr. Jelliffe also spoke of Marinesco's studies on lowered blood pressure, and the resultant neurofibril degenerations caused thereby. Whether these might be interpreted from the nutritive standpoint, or bore any relation to the subject of cell changes in anemia and lowered blood pressure, and the resultant sub-oxidations, was still undetermined. The subject, he concluded, of perverted chemism and neuropathology must be left open. It was a vast quagmire of speculation and generalization, but beyond all he thought there were many solid places, and the future would undoubtedly show more.

Dr. A. N. Richards called attention to the unsatisfactory character of the evidence regarding indol and skatol intoxications. He described experiments performed by Dr. John Howland and himself which showed that when the power of oxidation of the cells of the body was diminished, as by the injection of potassium cyanide, the symptoms caused by the administration of moderate doses of indol became much more prominent. They attributed these symptoms to the decreased detoxification of indol, and its consequent accumulation in greater quantities in the central nervous system.

Dr. Adolf Meyer said that coming back from the generalities in which some of the speakers had indulged, and which bore only a very distant relation to the subject under discussion and showed how liberally the clinician referred to the chemistry of the future, he wished to refer to the work of I. Coriat, which was mentioned as having been done under the speaker's direction.

The work referred to was in connection with the estimation of the amount of indol in certain cycles of motor disturbance, with both increased and decreased motor activity. The valuation placed on the presence of indol, Dr. Meyer said, seemed to depend very much on the temperament of the investigator, and in some of the early reports, some very startling results had been recorded. More recent work had led to the conclusion that a great deal depended on the amount of fluid that was eliminated during the states of hypokinesis. If there was but little urine secreted, a small amount of indican would of course give a deeper color.

Dr. Meyer thought we should be rather guarded with inferences from the interesting experiments which had been referred to by Dr. Richards, as they would be apt to mislead those who were craving for results in their clinical search for indican.

Dr. Arnold Lorand, of Carlsbad, Austria, called attention to the fact that there was clinical and experimental evidence showing that the nervous system and metabolism were in very close relation. Metabolic disturbances were not infrequently observed after nervous disorders; thus, glycosuria, or even diabetes, might be observed after nervous emotion or shock, and the same was true of gouty attacks. On the other hand, in the course of diseases of metabolism, such as diabetes and gout, nervous troubles, such as neurasthenia, insomnia, etc., were very frequent.

There were also certain nervous diseases attended by positive alterations of metabolism. Thus, it had been shown by Prof. Magnus Levy, of Berlin, and also by Thiele-Nehring, Mattes, and others, that in Graves' disease, the processes of oxidation were augmented, while in myxedema they were diminished. Those two diseases, as was well known, were caused by alterations of the thyroid gland, and it had been shown by several writers, especially by Magnus Levy, that by thyroid treatment we were able to increase the processes of oxidation in persons suffering from myxedema. There were also other ductless glands which produced similar results; namely, the ovaries and testes. It had been shown by Prof. Loewy and Docent Dr. P. F. Richter, assistant to Prof. Senator, of Berlin, that after castration of those glands, the processes of oxidation were diminished, while by ovarian treatment they could be augmented.

The degeneration or extirpation of the above ductless glands, Dr. Lorand said, could also produce obesity, as he had shown in a paper presented before the French Congress of Internal Medicine, Paris, 1904, and in the *Medicinische Klinik,* of Berlin, March 27, 1905. Such cases of obesity he had called endogenous obesity, as they had nothing to do with obesity resulting from overnutrition. They could be produced by all those agencies which might cause a degeneration of the thyroid or sexual glands, or the pituitary body. Thus, after extirpation or degeneration of the above glands caused by infectious diseases (Roger and Garnier, Bayon, de Quervain, Crispino and Jorri), or resulting from successive pregnancies, especially associated with prolonged lactation, or from sexual excesses, or after tumors of the pituitary body, obesity had frequently been observed. Madelung had lately published in the *Beitrage fur Klin. Chirurgie,* 1903, a case of colossal obesity after a shot wound of the pituitary body.

Besides metabolism, these glands also influenced the nervous system in a powerful way. Thus, all alterations in these glands were followed, as a rule, by marked nervous symptoms. It was especially observed that the thyroid gland exercised an influence upon all those functions which had their location in the cortex cerebri. These included intelligence, remembrance, will-power and sleep. In myxedema all those functions were impaired, and sleepiness was a marked symptom. Sleepiness was present, as a rule, in all processes of degeneration of the thyroid gland. It was also associated with certain cases of obesity. The influence of the thyroid upon obesity was also shown by the fact that we were able to produce a considerable decrease of fat by thyroid treatment.

In speaking of the sleeping sickness, Dr. Lorand said that in a paper presented before the last German Congress of Internal Medicine at Wiesbaden he had shown that that disease was due to the action of the trypanosoma toxins upon the thyroid, which was affected in many infectious diseases. This produced a condition of myxedema which presented the same symptoms as sleeping sickness, the resemblance being not only clinical, but also pathological as regarded the anatomical findings of the central nervous system. He also mentioned that Hessler, in a case of catalepsia published in the *American Journal of Medical Sciences* a few years ago noted rapid improvement after thyroid treatment. Finally, he stated that by giving the serum of goats whose thyroid was extirpated, he could produce marked hypnotic effects in every case of insomnia.

That the sexual glands influenced the nervous system was shown by the frequent occurrence of nervous symptoms, even psychoses, after alterations of the sexual glands, especially the ovaries. This was seen during menstruation and pregnancy, and at the time of puberty and the menopause. In all these conditions, also, the thyroid gland was often swollen.

Dr. Lorand said that in cases of melancholia he had found alterations of the thyroid and ovaries. Recently, in the Pennsylvania Insane Asylum, he had seen two cases of dementia in adult males who had scarcely any growth of hair on the face, and who had small, undeveloped testicles. In another case of imbecility in a young man of eighteen years there was the same absence of hair on the face, associated with infantilismus and cryptorchism.

PHILADELPHIA NEUROLOGICAL SOCIETY.

March 27, 1906.

The President, Dr. D. J. McCarthy, in the Chair.

Acute Myelitis in a Boy.—Dr. Ralph Pemberton presented the case and said that acute myelitis in childhood, other than acute anterior poliomyelitis, or that due to compression, tuberculosis or syphilis, has received relatively scant attention from either neurologists or pediatrists.

For example, Gowers in his last edition, dismisses the question with a few lines; Oppenheim barely touches on it, mentioning a case consequent upon slight traumatism in a girl of eight. Sachs, in his text-book on the "Nervous Diseases of Children" is about as brief; while Starr in "Diseases of the Nervous System," and Rotch in the "Diseases of Childhood" barely mention it. More satisfactory accounts, however, are to be had in Holt, Ashby and Wright, and Keating, in their respective works on pediatrics. In the so-called idiopathic variety of myelitis, Holt is inclined to ascribe the etiologic factor to an infectious process; while Oppenheim regards it as an unrecognized trauma, slight enough perhaps to have escaped notice, but of a severity sufficient to produce lesions.

All authorities are apparently agreed that acute myelitis of this variety is very unusual in childhood, particularly under the age of ten; and according to Holt, the prognosis is extremely poor, the majority of cases progressing from bad to worse. Mary Putnam Jacobi, however, in Keating's "Cyclopedia of the Diseases of Children," retails a series of eight cases of which two recovered entirely and two were greatly improved. The onset was gradual in all of these but one, an adolescent of eighteen, and this is the rule, according to Holt; early local symptoms being followed by more diffuse symptoms as the disease progresses.

Ashby and Wright in their work on pediatrics devote rather more space to it, and consider the chances of recovery greater in children than in adults, as the cord seems to recover more readily in early life than in later years. They regard the dorsal region as that part of the cord most commonly affected, and lay some emphasis on cases which have been reported as